

REMARKS – General:

By the above Amendment, Applicant has better described what constitutes a “long small-angle conical part” as used in the Claims to describe the main advantage of this invention.

The Rejection of All Claims under 35 U.S.C. 102(e) on Cramer, et.al. Overcome

Re: Claim 5: Cramer, et.al. presents drawings showing a bullet nose shaped second electrode (31) that the Examiner claims is conical with a long, small-angle taper. A cone is defined as “a solid figure whose base is a circle and whose sides **taper evenly** up to an apex”. The second electrode (31) of Cramer is shown in the drawings to have a cylindrical section of approximately 20% of its length at the widest part, and then tapers unevenly at an ever increasing angle to its bullet point. The average angle of taper as calculated from the typical dimensions described by Cramer, et.al. is 38 degrees.

Applicant respectfully suggests that the varying tapering shape of the Cramer, et.al. second electrode (31) in combination with the 20% part that is cylindrical, is not capable of providing a completely intimate contact with the soil over its entire area as it is being driven into the soil, and therefore does not perform the same function as the conical section that has a **long, continuous small-angle taper** section shape shown, and described in Applicants Amended Application. Applicant respectfully suggests that the advantage of the long, continuous small-angle taper in maintaining intimate soil contact was **unobvious** to Cramer, et.al. since this action is not required for their invention.

Re: Claim 6: Applicant respectfully suggests that Examiner has misunderstood the function of the various components of the Cramer, et.al. electrode assembly. This is a two electrode system (first electrode (33) and second electrode (31)), with an insulating ring unit (32) that prevents the two electrode elements from contacting each other. The Cramer, et.al. electrode assembly is intended to be driven deeply into the ground, such that both the electrodes are fully inserted into the soil (Figs. 5 & 6). The desired measurement point for determination of soil moisture is taught by Cramer, et.al. to be at the plant root level, which is several inches into the soil.

The measurement point of this electrode assembly is immediately around the ring insulator. Measurement accuracy is not dependent upon the exact amount of the electrode surface that is intimately in contact with the soil using the electric potential measurement technology described. Therefore the shoulder on the Cramer, et.al. conical part has no functional purpose that will improve accuracy. Instead, it simply has a mechanical purpose to provide a place at which to affix the insulating ring. And the fact that the first electrode (33) is completely cylindrical, will result in uneven and erratic soil contact area as the assembly is driven into the ground.

The only item that could be construed as a gauge for penetration depth is the shrink type water sealant (34) element, which is at the other end of the assembly and not in proximity to the second electrode (31). Further, Fig. 5 shows the probe assembly completely buried, illustrating that depth of penetration into the soil is not critical to accurate soil measurement with the Cramer, et.al. device, and therefore the Cramer, et.al. device appears to need no depth indicator.

Applicant's electrode requires the unique and unusual shape as described in this Amended Application because a **radio-frequency measurement** of soil electrical

parameters is being made, which demands a **constant area of intimate contact** with the soil to assure accuracy. The shoulder and undercut shaft area above the shoulder guarantee controlled penetration depth, as determined by the shoulder's relationship to the soil surface. The undercut area serves to detach the electrode measuring surface from the soil if the electrode is driven slightly deeper into the soil, thus always assuring **constant measuring area**. The requirement for constant measuring area is related to the use of radio-frequency energy for measurement of the soil electrical parameters. Therefore, Applicant respectfully suggests that this requirement is **unobvious** in the Cramer, et.al. device, which does not use radio-frequency measurement.

Re: Claim 7: Examiner claims that the Cramer, et.al. shrink type water seal (34) is intended to be used as a depth of penetration gauge. Reading the patent reveals no teaching by Cramer, et.al. of this use for element (34). In fact, Fig.5 shows the probe totally buried in a horizontal position.

Applicant's invention uses the undercut shoulder on the soil penetrating electrode as a means whereby the soil contact area can be assured to be constant in the instance where the electrode is driven slightly deeper than intended. This is important to the accuracy of the **radio-frequency measurements** accomplished using this electrode.

As a secondary advantage of this shoulder, a visual indication of how far into the soil the probe has been driven is always available. Applicant suggests that this added feature is a new and novel way to avoid the addition of a special depth of penetration marking means, such as Examiner suggests is the purpose of Cramer, et.al. (34).

CONCLUSION: For the reasons above, Applicant submits that the clarifications added to the Specifications now show that the claims all define patentability over the prior art, and therefore submits that this Application is now in condition for allowance, which action is respectfully requested.

Conditional Request for Constructive Assistance

Applicant has amended the specification of this application so that it is proper, definite, and defines novel structure which is also unobvious. If, for any reason, this application is not believed to be in full condition for allowance, Applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P.

§ 2173.02 and § 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,



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Applicant Pro Se

Enc'l. Complete Application (9 pages) showing additions.

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I hereby certify that this correspondence, and attachments will be deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to "Box Non-Fee Amendments, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date below: Date: Nov. 25, 2005

Inventor's Signature: 